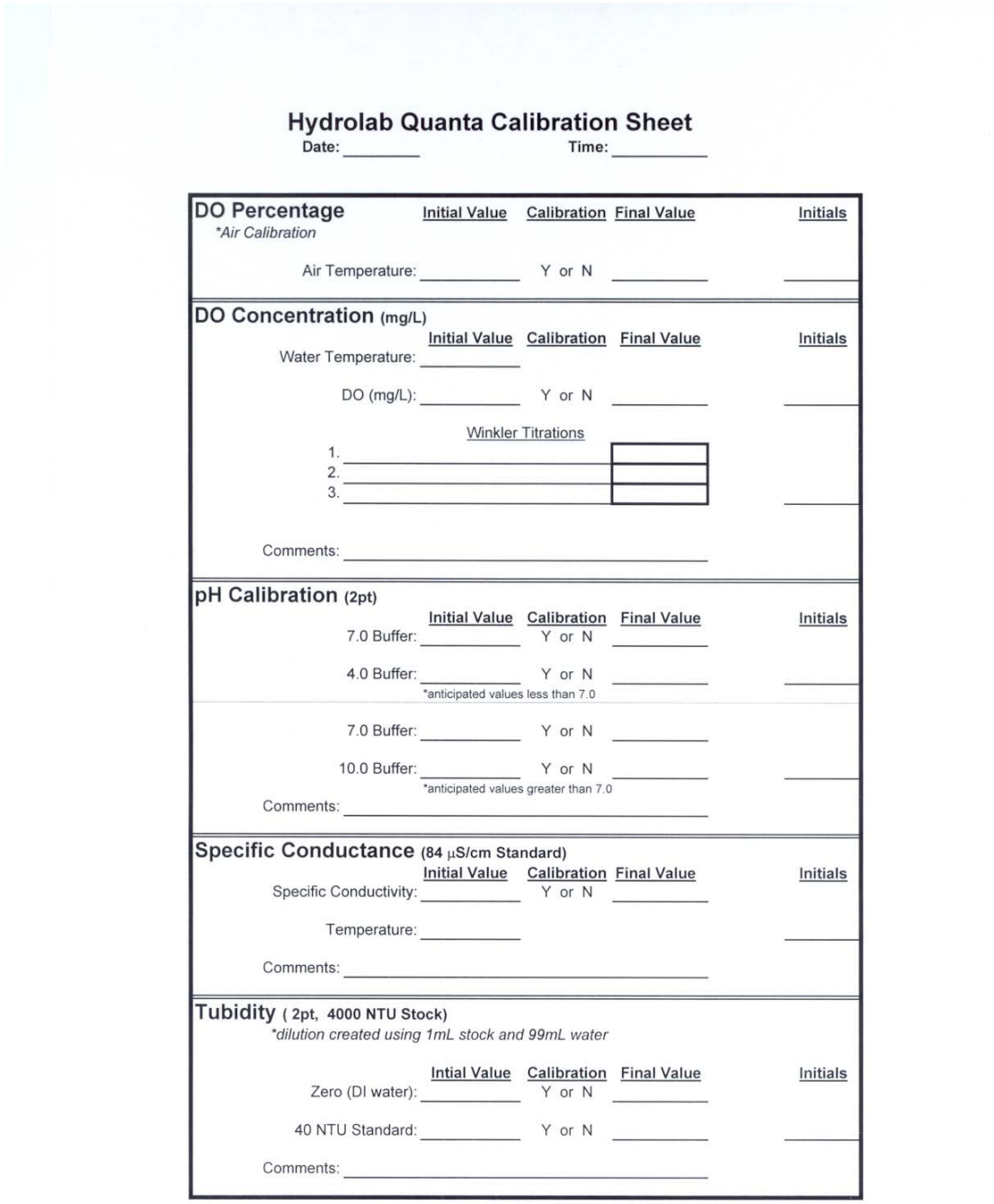
Appendix A

Figure 1. Example of Calibration Logbook Field Sheet



Hydrolab Quanta Calibration Sheet

Date: _____ Time: _____

DO Percentage **Air Calibration*

	Initial Value	Calibration	Final Value	Initials
Air Temperature:		Y or N		

DO Concentration (mg/L)

	Initial Value	Calibration	Final Value	Initials
Water Temperature:				
DO (mg/L):		Y or N		

Winkler Titrations

1. _____
2. _____
3. _____

Comments: _____

pH Calibration (2pt)

	Initial Value	Calibration	Final Value	Initials
7.0 Buffer:		Y or N		
4.0 Buffer:		Y or N		

**anticipated values less than 7.0*

7.0 Buffer:		Y or N		
10.0 Buffer:		Y or N		

**anticipated values greater than 7.0*

Comments: _____

Specific Conductance (84 µS/cm Standard)

	Initial Value	Calibration	Final Value	Initials
Specific Conductivity:		Y or N		
Temperature:				

Comments: _____

Tubidity (2pt, 4000 NTU Stock)

**dilution created using 1mL stock and 99mL water*

	Intial Value	Calibration	Final Value	Initials
Zero (DI water):		Y or N		
40 NTU Standard:		Y or N		

Comments: _____

Figure 2. Example of Equipment Logbook Sheet

Equipment Service Log

Date	Initials	Service	Comments

Figure 3. Example of New Jersey Analytical Laboratory Result Reporting Format

New Jersey Analytical Laboratories

Sample Information

Lab ID:	Date Sampled:
Site No.	Time Sampled:
Location:	Date Received:
	Collection Method:

Parameter	Result	Detection Limit	Units	Dilution	Method Code
Total Coliform		4	Colonies/100 ml	4	SM 9222 B
E. Coli		4	Colonies/100 ml	4	SM 9222 B
Fecal Coliform		4	Colonies/100 ml	4	SM 9222 D
Enterococcus		4	Colonies/100 ml	4	SM 9230 C
Chlorophyll		1.0	mg/m^3	NA	SM 10200 H
Ammonia as NH3-N		0.05	mg/L	1	EPA 350.3
Total Kjeldahl Nitrogen		0.05	mg/L	1	EPA 351.3
Nitrite as N		0.02	mg/L	1	EPA 300.0
Nitrate as N		0.02	mg/L	1	EPA 300.0
Chloride		0.10	mg/L	1	EPA 300.0
Ortho-Phosphate		0.01	mg/L	1	EPA 365.2
Phosphorus, total as P		0.02	mg/L	1	EPA 365.2
Turbidity		0.5	NTU	1	EPA 180.1
Alkalinity as CaCO3		1.0	mg/L	1	EPA 310.1
Hardness, total as CaCO3		1.0	mg/L	1	EPA 130.2
Total Suspended Solids		0.5	mg/L	1	EPA 160.2
Total Dissolved Solids		6.0	mg/L	1	EPA 160.1

ND:Not Detected above Detection Limit
NA:Not Applicable

George Latham Date
Laboratory Director

Laboratory ID # 11005

Precision testing for a cleaner environment.

Figure 4. Example of Chain of Custody Record

LOWER DELAWARE MONITORING PROGRAM
CHAIN-OF-CUSTODY RECORD

Page: 1 of 1

Project Manager:		Robert L. Limbeck		Agency: Delaware River Basin Commission			
Address & Phone:		PO Box 7360, W. Trenton NJ 08628 609-883-9500 x 230		Project: Lower Delaware Cooperative Monitoring			
Date Collected (YYYYMMDD)	Time Collected (Mil. HHMM)	Site No. Location	# jars	Sample Type (see below)	Preserv-ation (see below)	Collect. Method (Grab / Composite)	Log Number (Seq+)
Sampled by (signature):							
Received by (signature):				Date		Time	
Received by (signature):				Date		Time	
Received by (signature):				Date		Time	
Received by (signature):				Date		Time	
Received by (signature):				Date		Time	

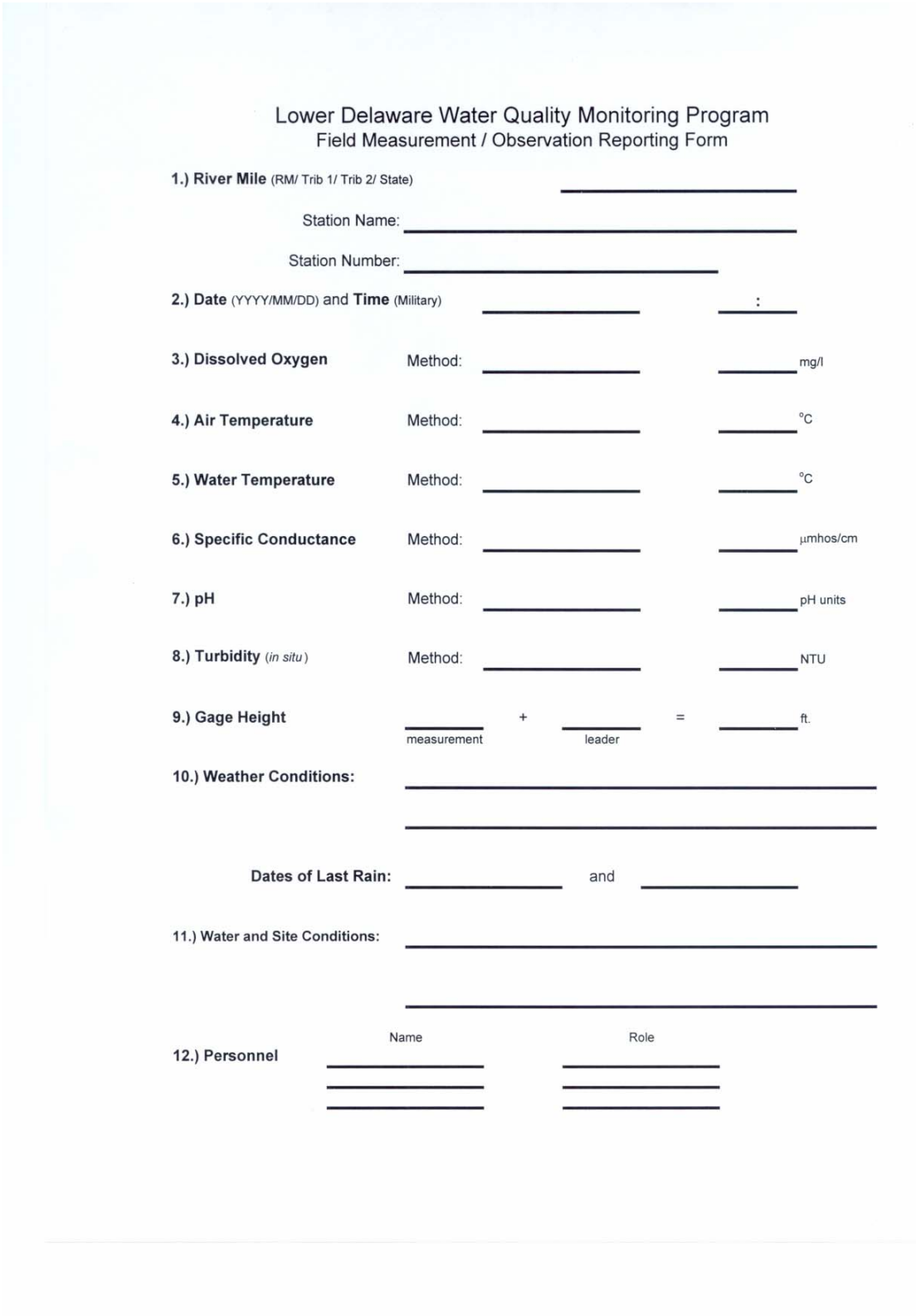
Instructions/Notes: Each Sample Bag Contains:

1 L Unpreserved = N/N; Alk; Ortho; TDS; TSS
500 ml pH<2 H_2SO4 = TP; NH_3; TKN
120 ml sterilized = Fecal Coliform
120 ml sterilized = Enterococci
120 ml sterilized = E. coli & Total Coliform
120 ml pH<2 HNO_3 = Hardness
1 L Amber unpreserved glass = Chlorophyll a (selected sites)

Instructions:

Record all information concerning samples.
Check log numbers against containers to assure all samples are present, then sign in appropriate spaces.
Keep original Chain-of-Custody Record with samples.
Person relinguishing samples should receive a photocopy of this form.
Notify Project Manager immediately of any damaged or missing samples.

Figure 5. Example of Field Measurement/ Observation Data Sheet



Lower Delaware Water Quality Monitoring Program
Field Measurement / Observation Reporting Form

1.) River Mile (RM/ Trib 1/ Trib 2/ State) _____

Station Name: _____

Station Number: _____

2.) Date (YYYY/MM/DD) and **Time** (Military) _____ _____ : _____

3.) Dissolved Oxygen Method: _____ _____ mg/l

4.) Air Temperature Method: _____ _____ °C

5.) Water Temperature Method: _____ _____ °C

6.) Specific Conductance Method: _____ _____ µmhos/cm

7.) pH Method: _____ _____ pH units

8.) Turbidity (*in situ*) Method: _____ _____ NTU

9.) Gage Height _____ (measurement) + _____ (leader) = _____ ft.

10.) Weather Conditions: _____

_____

Dates of Last Rain: _____ and _____

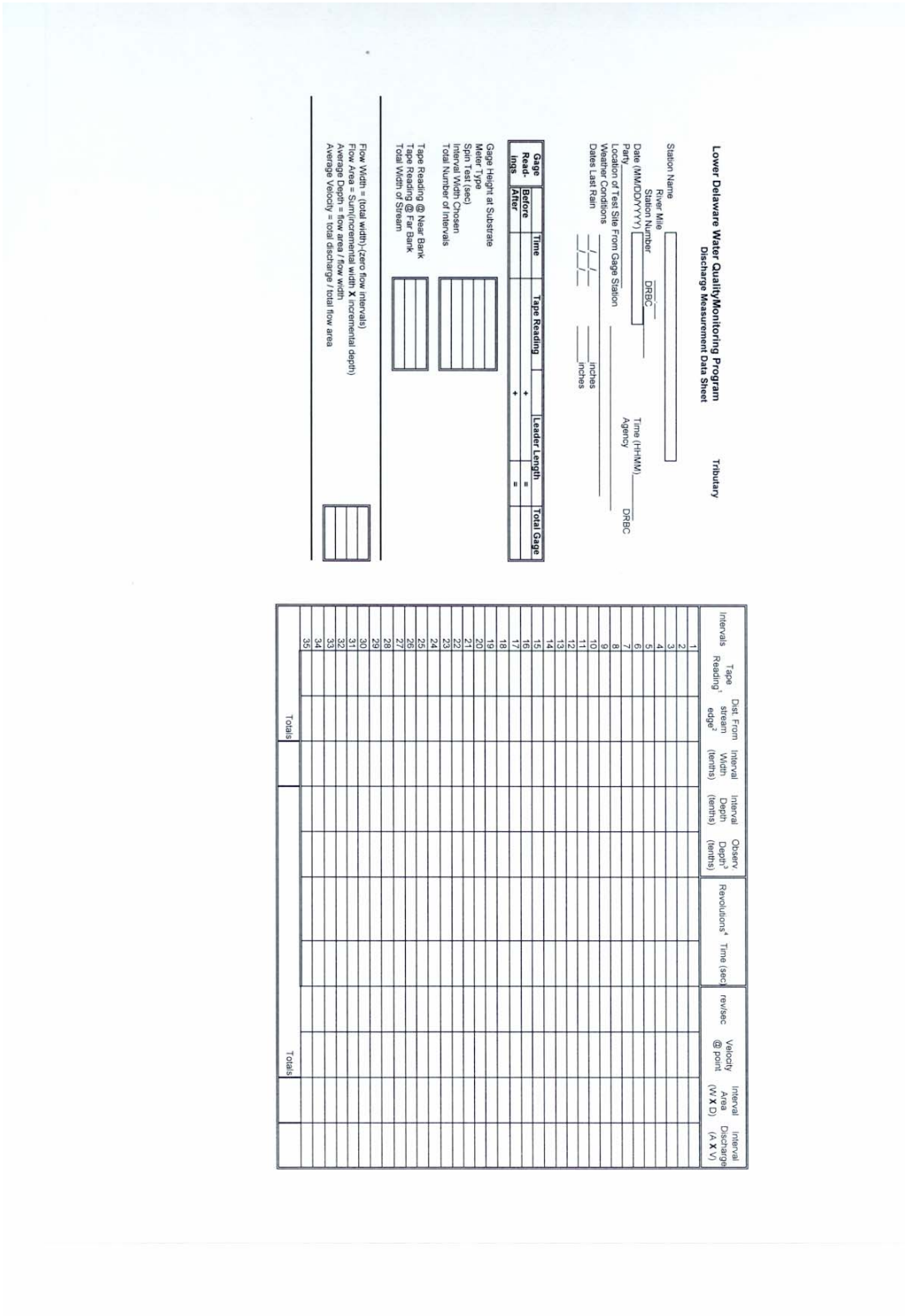
11.) Water and Site Conditions: _____

_____

12.) Personnel

Name	Role
_____	_____
_____	_____
_____	_____

Figure 6. Example of Tributary Discharge Measurement Sheet



Lower Delaware Water QualityMonitoring Program **Tributary**
Discharge Measurement Data Sheet

Station Name
River Mile
Station Number DRBC
Date (MM/DD/YYYY)
Party Time (HHMM)
Location of Test Site From Gage Station Agency DRBC
Weather Conditions
Dates Last Rain ___/___/___ inches
___/___/___ inches

Gage Read-ings	Time	Tape Reading		Leader Length		Total Gage
Before			+		=	
After			+		=	

Gage Height at Substrate
Meter Type
Spin Test (sec)
Interval Width Chosen
Total Number of Intervals

Tape Reading @ Near Bank
Tape Reading @ Far Bank
Total Width of Stream

Flow Width = (total width)-(zero flow intervals)
Flow Area = Sum(incremental width X incremental depth)
Average Depth = flow area / flow width
Average Velocity = total discharge / total flow area

Intervals	Tape Reading[1]	Dist. From stream edge[2]	Interval Width (tenths)	Interval Depth (tenths)	Observ Depth[3] (tenths)	Revolutions[4]	Time (sec)	rev/sec	Velocity @ point	Interval Area (W X D)	Interval Discharge (A X V)
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
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29											
30											
31											
32											
33											
34											
35											
Totals									Totals		

Modified from ***Kratzer, 1996***

Figure 7. Data Management Format for the Lower Delaware Water Quality Monitoring Program

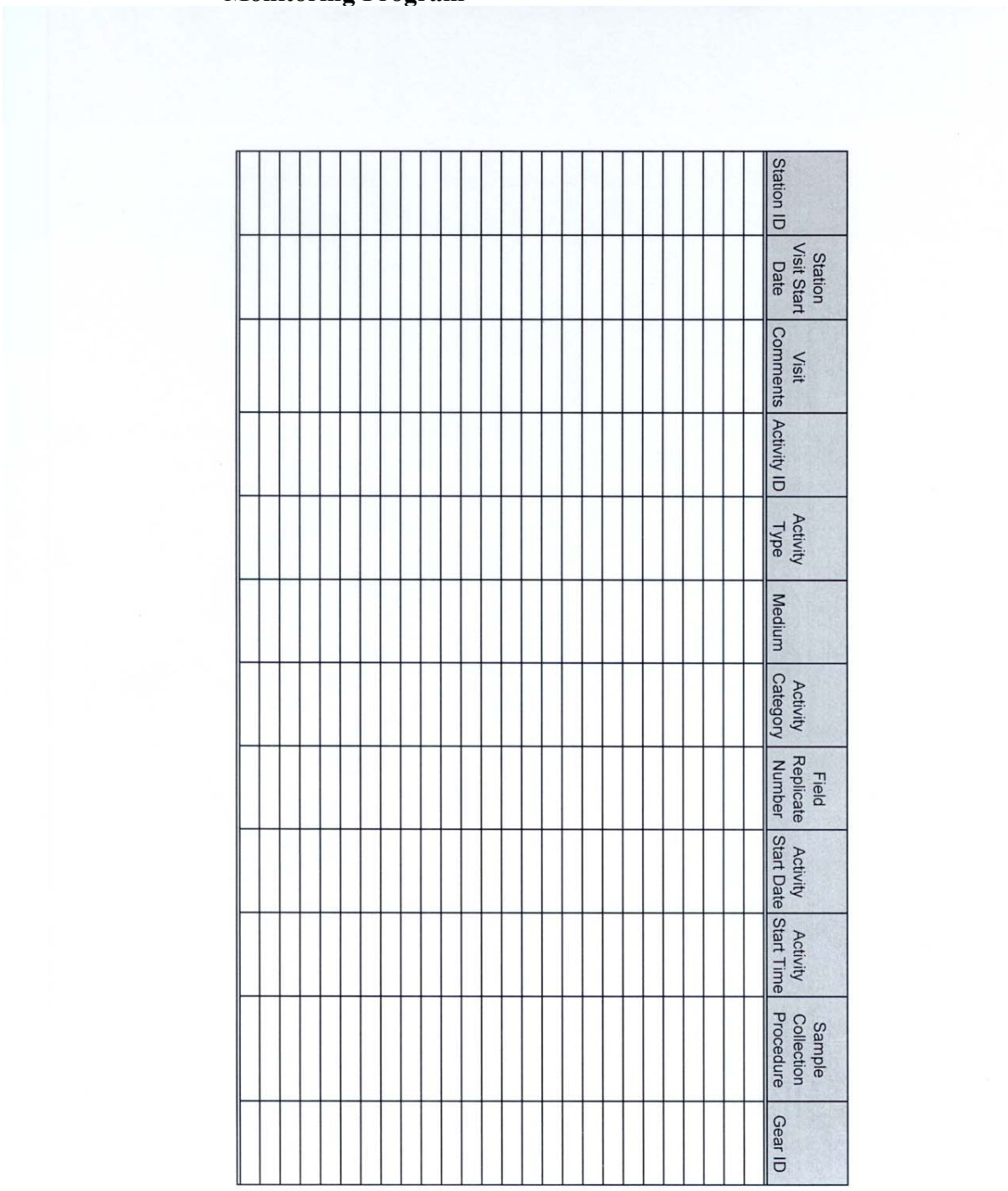

Figure 7. Data Management Format for the Lower Delaware Water Quality Monitoring Program (continued)

Gear Configuration ID	Sample Preservation, Transport and Storage	Characteristic Group ID	Characteristic Row ID	Result Value	Result Comment	Lab ID	Quantification Low	Quantification High	Detection Limit Value	Detection Limit Unit	Station Visit

Figure 8. Matrix of Monitoring Activities associated with the Lower Delaware Water Quality Monitoring Program

Lower Delaware Monitoring Matrix, May-September 2003

F = grab sample, analyze in field
G = grab sample, preserve for lab
C = composite sample from PA-Center-NJ channels
S = get ADAPS streamflow data for time of sample

LGR = Water Level Logger installed for all or part of season
BLACKOUT = No Samples
T= Surveyor's Tape

				DRBC Field						Contract Lab Parameters															
Site No	River Mile	Sites	DATE/2003	DO (SM 4500 O)	pH (SM 4500 H+)	Air temp (SM 2550)	Water temp (SM 2550)	Gage Ht (ft.01)	Conductivity (ISO 7888:1985)	Hardness (EPA 130.2)	Turbidity (EPA 180.1)	Alkalinity (EPA 310.1)	Chlorophyll a (SM 10200H)	Total P (EPA 365.2)	Orthophosphate (EPA 365.2)	Ammonia N (EPA 350.2)	Nitrate (EPA 300.0)	Nitrate (EPA 300.0)	TKN (EPA 351.3)	Fecal Coliform (SM 9222D)	E. coli & TC (SM 9222B+coliblue)	Enterococcus (SM 9230C)	TSS (EPA 160.2)	TDS (EPA 160.1)	Chloride (EPA 300.0)
		RUNS 1 THROUGH 10																							
DRBCNJPAC01	134.34	Delaware River @ Calhoun St Bridge, PA-NJ	DAY1 WQ1	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCNJPAC02	141.80	Delaware River @ Washington Crossing Br, PA-NJ	DAY1 WQ1	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCPA0008	146.30	Pidcock Creek, PA	DAY1 WQ1	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJPAC11	148.70	Delaware River @ Lambertville-New Hope Bridge, PA-NJ	DAY1 WQ1	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCNJ0012	152.50	Wickecheoke Creek, NJ	DAY1 WQ1	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJ0013	154.00	Lockatong Creek, NJ	DAY1 WQ1	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJPAC04	155.40	Delaware River @ Bulls Island Footbridge, PA-NJ	DAY1 WQ1	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCPA0016	155.60	Paunacussing Creek, PA	DAY2 WQ2	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCPA0015	157.00	Tohickon Creek, PA	DAY2 WQ2	F	F	F	F	T	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
DRBCPA0017	159.90	Tinicum Creek, PA	DAY2 WQ2	F	F	F	F	LGR	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJ0020	164.10	Nishisakawick Creek, NJ	DAY2 WQ2	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJPAC06	167.70	Delaware River @ Milford, NJ-PA	DAY2 WQ2	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCPA0021	173.70	Cooks Creek, PA	DAY2 WQ2	F	F	F	F	LGR	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJPAC07	174.80	Delaware River @ Riegelsville Br, PA-NJ	DAY2 WQ2	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCNJ0025	174.60	Musconetcong River, NJ	DAY2 WQ2	F	F	F	F	S	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJ0027	177.40	Pohatcong Creek, NJ	DAY2 WQ2	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJPAC08	183.82	Delaware River @ Northampton St Br, PA-NJ	DAY3 WQ3	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCPA0026	183.66	Lehigh River, PA	DAY3 WQ3	F	F	F	F	S	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
DRBCPA0028	184.10	Bushkill Creek, PA	DAY3 WQ3	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCPA0031	190.80	Martins Creek, PA	DAY3 WQ3	F	F	F	F	T	F	G	G	G	■	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJ0032	197.80	Pequest River, NJ	DAY3 WQ3	F	F	F	F	S	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJPAC09	197.84	Delaware River @ Belvidere-Riverton Bridge, NJ-PA	DAY3 WQ3	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
DRBCNJ0036	207.00	Paulins Kill, NJ	DAY3 WQ3	F	F	F	F	S	F	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
DRBCNJPAC10	207.40	Delaware River @ Columbia-Portland Footbr, NJ-PA	DAY3 WQ3	F	F	F	F	S	F	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		10X/Summer Summary	n / week =	24	24	24	24	24	24	24	24	24	14	24	24	24	24	24	24	24	24	24	24	24	24
			n/year	240	240	240	240	240	240	240	240	240	140	240	240	240	240	240	240	240	240	240	240	240	240

Run	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
WQ1	5/6	5/20	6/4	6/17	7/8	7/22	8/5	8/19	9/9	9/23
WQ2	5/7	5/21	6/4	6/20	7/9	7/23	8/6	8/20	9/10	9/24
WQ3	5/8	5/22	6/5	6/19	7/10	7/24	8/7	8/21	9/11	9/25